CLAIMS:

1.   A method of providing a remote data processing device with control data that enables a user to control the operation of a consumer electronics device, the method comprising:

generating a hypermedia data message, the hypermedia data message comprising data representing one or more menu options, the menu options corresponding to one or more actions configured to be performed by the consumer electronics device in response to receiving a control message corresponding to one or more of the menu options; and

sending the hypermedia data message to the remote data processing device using a hypermedia data communications protocol,

wherein both the remote data processing device and the consumer electronics device are configured to communicate using the hypermedia data communications protocol.

2.   The method according to Claim 1, further comprising:

presenting the one or more menu options to the user using a man-machine interface; and

generating and sending to the consumer electronics device a hypermedia request message corresponding to selected menu options in response to a user instruction.

3.   A method of providing a remote data processing device with data representing the operational state of a consumer electronics device, the method comprising:

generating a hypermedia data message in dependence on the operational state of the consumer electronics device; and

sending the hypermedia data message to the remote data processing device using a hypermedia data communications protocol,

wherein both the remote data processing device and the consumer electronics device are configured to perform communication using the hypermedia

5   data communications protocol.

4.   A method of controlling a consumer electronics device using a remote data processing device, the method comprising:

generating a hypermedia data message, the hypermedia data message

10   comprising data representing one or more menu options, the menu options corresponding to one or more actions configured to be performed by the consumer electronics device in response to receiving a control message corresponding to one or more of the menu options;

sending the hypermedia data message to the remote data processing device

15   using a hypermedia data communications protocol;

presenting the one or more menu options to a user via a man-machine interface;

allowing the user to select one or more of the menu options using the man-machine interface;

20   generating and sending to the consumer electronics device a control message in response to the user selection; and

performing the corresponding action or actions in response to the received control message,

wherein both the remote data processing device and the consumer

25   electronics device are configured to communicate using the hypermedia data communications protocol.

5.   The method according to Claim 3, further comprising communicating the remote data processing device and the consumer electronics device using a

30   proximity bearer.

6.   The method according to Claim 1, wherein the one or more menu options correspond to one or more actions currently performable by the consumer electronics device.

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7.   The method according to Claim 3, further comprising generating the hypermedia data message in two or more hypermedia mark-up languages.

8.   A computer readable medium for storing one or more computer programs

10   for performing a method of providing a remote data processing device with data representing the operational state of a consumer electronics device, the method comprising:

        generating a hypermedia data message in dependence on the operational state of the consumer electronics device; and

15   sending the hypermedia data message to the remote data processing device using a hypermedia data communications protocol,

        wherein both the remote data processing device and the consumer electronics device are configured to communicate using the hypermedia data communications protocol.

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9.   An apparatus for providing a remote data processing device with data representing the operational state of a consumer electronics device, the apparatus comprising:

        means for generating a hypermedia data message in dependence on the

25   operational state of the consumer electronics device; and

        means for sending the hypermedia data message to the remote data processing device using a hypermedia data communications protocol,

        wherein both the remote data processing device and the consumer electronics device are configured to communicate using the hypermedia data

30   communications protocol.

10.   A consumer electronics device adapted to provide a remote data processing device with control data that enables a user to control the operation of the consumer electronics device, the consumer electronics device comprising:

5   means for generating a hypermedia data message, the hypermedia data message comprising data representing one or more menu options, the menu options corresponding to one or more actions configured to be performed by the consumer electronics device in response to receiving a control message corresponding to one or more of the menu options; and

10   means for sending the hypermedia data message to the remote data processing device using a hypermedia data communications protocol,

wherein the consumer electronics device is configured to communicate using the hypermedia data communications protocol.

15   11.   A consumer electronics device adapted to provide a remote data processing device with data representing the operational state of the consumer electronics device, the consumer electronics device comprising:

means for generating a hypermedia data message in dependence on the operational state of the consumer electronics device; and

20   means for sending the hypermedia data message to the remote data processing device using a hypermedia data communications protocol,

wherein the consumer electronics device are configured to communicate using the hypermedia data communications protocol.

25   12.   A consumer electronics device adapted to be controlled using a remote data processing device, the consumer electronics device comprising:

means for generating a hypermedia data message, the hypermedia data message comprising data representing one or more menu options, the menu options corresponding to one or more actions configured to be performed by the consumer

electronics device in response to receiving a control message corresponding to one or more of the menu options;

means for sending a hypermedia data message to the remote data processing device using a hypermedia data communications protocol;

5   means for receiving a control message from the remote data processing device using the hypermedia data communications protocol; and

means for performing one or more actions in response to a received control message,

wherein the consumer electronics device is configured to communicate

10   using the hypermedia data communications protocol.

13.   The consumer electronics device according to Claim 11, wherein the consumer electronics device is adapted to send hypermedia data messages and/or receive control messages using a proximity bearer.

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14.   The consumer electronics device according to Claim 10, wherein the one or more menu options correspond to one or more actions currently performable by the consumer electronics device.

20   15.   The consumer electronics device according to Claim 11, wherein the consumer electronic device is configured to generate the hypermedia data message in two or more hypermedia mark-up languages.

16.   A control unit for a consumer electronics device, the control unit being

25   adapted to provide a remote data processing device with control data that enables a user to control the operation of the consumer electronics device, the control unit comprising:

means for determining the operational state of the consumer electronics device;

means for generating a hypermedia data message, the hypermedia data message comprising data representing one or more menu options, the menu options corresponding to one or more actions configured to be performed by the consumer electronics device; and

5   means for sending the hypermedia data message to the remote data processing device using a hypermedia data communications protocol.

17.   A control unit for a consumer electronics device, the control unit being adapted to provide a remote data processing device with data representing the

10   operational state of the consumer electronics device, the control unit comprising:

means for determining the operational state of the consumer electronics device;

means for generating a hypermedia data message in dependence on the operational state of the consumer electronics device; and

15   means for sending the hypermedia data message to the remote data processing device using a hypermedia data communications protocol.

18.   A control unit for a consumer electronics device, the control unit comprising:

20   means for generating a hypermedia data message, the hypermedia data message comprising data representing one or more menu options, the menu options corresponding to one or more actions configured to be performed by the consumer electronics device in response to receiving one or more control messages corresponding to one or more of the menu options;

25   means for sending the hypermedia data message to a remote data processing device using a hypermedia data communications protocol;

means for receiving a control message from a remote data processing device;

means for controlling the consumer electronics device to perform one or

30   more actions in response to a received control message.

19.   The control unit according to Claim 17, wherein the control unit is adapted to communicate using a proximity bearer.

5   20.   The control unit according to Claims 16, wherein the one or more menu options correspond to one or more actions currently performable by the consumer electronics device.

21.   The control unit according to Claim 17, wherein the control unit is adapted

10   to generate the hypermedia data message in two or more hypermedia mark-up languages.

22.   An integrated circuit for a consumer electronics device, comprising:

        a communication unit adapted to communicate using a proximity bearer;

15   and

        an interface unit configured to provide an interface between the communication unit and a controller of the consumer electronics device.

23.   The integrated circuit according to Claim 22, further comprising a

20   proximity link controller adapted to control communications links of the proximity bearer to remote communications devices.

24.   The integrated circuit according to Claim 22, further comprising a virtual machine unit configured to cause the generation of hypermedia data messages

25   and/or consumer electronics device control messages for controlling the consumer electronics device.

25.   The integrated circuit according to Claim 24, further comprising a hypermedia interpreter for configuring and controlling data input and output of the

30   virtual machine unit.

26.   The integrated circuit according to Claim 22, further comprising a filter configured to perform filtering control messages received via the communication unit.

27.   The integrated circuit according to Claim 22, further comprising a hypermedia protocol generation unit configured to generate a hypermedia protocol, wherein the communication unit is further adapted to communicate using the hypermedia protocol.

28.   The integrated circuit according to Claim 22, wherein the interface unit is adapted to communicate using a home control protocol interface.

29.   A data processing device, comprising:

        a proximity bearer communications unit configured to communicate using a proximity bearer; and

        a hypermedia transport protocol generation unit configured to generate a hypermedia transport protocol,

        wherein the device is adapted to communicate with remote data processing devices using the hypermedia transport protocol over the proximity bearer.

30.   The device according to Claim 29, further comprising a proximity link controller adapted to control communications links of the proximity bearer to remote communications devices.

31.   The device according to claim 30, wherein the proximity link controller is adapted to function as a hypermedia proxy for one or more remote data processing devices.

32.   A method of controlling a consumer electronics device, the method comprising:

receiving a hypermedia request message;

determining one or more actions to be performed by the consumer electronics device, the determining being performed in dependence on the hypermedia request message; and

performing the one or more actions,

wherein the consumer electronics device is configured to communicate using a hypermedia data communications protocol over a proximity bearer.

33.   The method according to Claim 32, wherein the hypermedia request message is generated by a remote data processing device, the remote data processing device being configured to communicate using a hypermedia data communications protocol over a proximity bearer.

34.   The method according to Claim 33, wherein the hypermedia request message is generated by the remote data processing device in response to a user selection of a hyperlink in a hypermedia data message, the hypermedia data message being provided to the remote data processing device by the consumer electronics device.

35.   A computer readable medium storing one or more computer programs for performing a method of controlling a consumer electronics device, the method comprising:

receiving a hypermedia request message;

determining one or more actions to be performed by the consumer electronics device, the determining being performed in dependence on the hypermedia request message; and

performing the one or more actions,

wherein the consumer electronics device is configured to communicate using a hypermedia data communications protocol over a proximity bearer.

36. An apparatus for controlling a consumer electronics device, the apparatus comprising:

    means for receiving a hypermedia request message;

    means for determining one or more actions to be performed by the consumer electronics device, the determining being performed in dependence on the hypermedia request message; and

    means for performing the one or more actions,

    wherein the consumer electronics device is configured to communicate using a hypermedia data communications protocol over a proximity bearer.

37. A method of generating a control program for performing a method of providing a remote data processing device with data representing the operational state of a consumer electronics device, the providing method comprising:

    generating a hypermedia data message in dependence on the operational state of the consumer electronics device; and

    sending the hypermedia data message to the remote data processing device using a hypermedia data communications protocol,

    wherein both the remote data processing device and the consumer electronics device are configured to communicate using the hypermedia data communications protocol.

38. A method of generating a machine code program, the method comprising:

    compiling a computer program written in a programming language, the programming language having native functions or methods for causing the interrogation of electronic input/output interfaces and having native functions or methods for causing the generation of menu option descriptions for inclusion in hypermedia data messages.

39.   The method according to Claim 38, wherein the machine code program is for use in a consumer electronics device or a control unit.

5   40.   The method according to Claim 38, wherein the machine code program is for use in an integrated circuit.

41.   A method of configuring a consumer electronics device to perform a method of providing a remote data processing device with data representing the

10   operational state of a consumer electronics device, the configuring method comprising:

compiling a computer program written in a programming language, the programming language having native functions or methods for causing the interrogation of electronic input/output interfaces and having native functions or

15   methods for causing the generation of menu option descriptions for inclusion in hypermedia data messages, the compiled program being used to configure the consumer electronics device,

wherein the providing method comprises:

generating a hypermedia data message in dependence on the operational

20   state of the consumer electronics device; and

sending the hypermedia data message to the remote data processing device using a hypermedia data communications protocol,

wherein both the remote data processing device and the consumer electronics device are configured to perform communication using the hypermedia

25   data communications protocol.

42.   A method of configuring a control unit for a consumer electronics device to perform a method of providing a remote data processing device with data representing the operational state of a consumer electronics device, the configuring

30   method comprising:

compiling a computer program written in a programming language, the programming language having native functions or methods for causing the interrogation of electronic input/output interfaces and having native functions or methods for causing the generation of menu option descriptions for inclusion in

5   hypermedia data messages, the compiled program being used to configure the control unit,

wherein the providing method comprises:

generating a hypermedia data message in dependence on the operational state of the consumer electronics device; and

10   sending the hypermedia data message to the remote data processing device using a hypermedia data communications protocol,

wherein both the remote data processing device and the consumer electronics device are configured to perform communication using the hypermedia data communications protocol.

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43.   A computer readable medium storing a compiler program for performing a method of providing a remote data processing device with data representing the operational state of a consumer electronics device, the providing method comprising:

20   generating a hypermedia data message in dependence on the operational state of the consumer electronics device; and

sending the hypermedia data message to the remote data processing device using a hypermedia data communications protocol,

wherein both the remote data processing device and the consumer

25   electronics device are configured to communicate using the hypermedia data communications protocol.

44.   A compiler system adapted to perform a method of providing a remote data processing device with data representing the operational state of a consumer

30   electronics device, the providing method comprising:

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generating a hypermedia data message in dependence on the operational state of the consumer electronics device; and

sending the hypermedia data message to the remote data processing device using a hypermedia data communications protocol,

5   wherein both the remote data processing device and the consumer electronics device are configured to communicate using the hypermedia data communications protocol.

45.   A method of compiling a computer program into a machine code program,
10   the computer program being written in a programming language, the programming language having native functions or methods for causing the interrogation of electronic input/output interfaces and having native functions or methods for causing the generation of menu option descriptions for inclusion in hypermedia data messages.

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46.   The method according to Claim 45, wherein the programming language has native functions or methods for causing the issuing of commands to electronic input/output interfaces.

20   47.   The method according to Claim 45, wherein the machine code is used to configure a consumer electronics device or a control unit of a consumer electronics device.

48.   A computer readable medium storing a compiler program for performing a
25   method of compiling a computer program into a machine code program, the computer program being written in a programming language, the programming language having native functions or methods for causing the interrogation of electronic input/output interfaces and having native functions or methods for causing the generation of menu option descriptions for inclusion in hypermedia
30   data messages.

49.   A compiler system adapted to perform a method of compiling a computer program into a machine code program, the computer program being written in a programming language, the programming language having native functions or

5   methods for causing the interrogation of electronic input/output interfaces and having native functions or methods for causing the generation of menu option descriptions for inclusion in hypermedia data messages.

50.   A method of controlling a controlled data processing device using a

10   controller data processing device, the method comprising:

        sending a hypermedia data message to the controller device using a hypermedia data communications protocol, the hypermedia data message comprising one or more hyperlinks;

        presenting the hypermedia data message to a user of the controller device

15   using a man-machine interface of the controller device;

        allowing the user to select one or more of the one or more hyperlinks using the man-machine interface;

        in response to the user selection, sending a hypermedia request message to the controlled device using the hypermedia data communications protocol; and

20   performing an action in response to the hypermedia request message received,

        wherein both the controlled device and the controller device are configured to communicate using the hypermedia data communications protocol.

25   51.   A method of controlling a controlled data processing device using a controller data processing device, the method comprising:

        sending a data message to a mediating data processing device using a data communications protocol, the mediating device configured to communicate using both the data communications protocol and a hypermedia data communications

30   protocol;

in response to the data message received, sending a hypermedia data message to the controller device using the hypermedia data communications protocol, the hypermedia data message comprising one or more hyperlinks;

presenting the hypermedia data message to a user of the controller device

5   using a man-machine interface of the controller device;

allowing the user to select one or more of the one or more hyperlinks using the man-machine interface;

in response to the user selection, sending a hypermedia request message to the mediating device using the hypermedia data communications protocol;

10   in response to the hypermedia request message received, sending a control data message to the controlled device using the data communications protocol; and

performing an action in response to the control data message received,

wherein the controlled device is configured to communicate using the data communications protocol, and wherein the controller device is configured to

15   communicate using the hypermedia data communications protocol.

52.   A method of receiving status information from a consumer electronics device at a remote data processing device, the method comprising:

sending a hypermedia data message to the remote device using a

20   hypermedia data communications protocol over a proximity bearer, the hypermedia data message comprising data representing the state of the consumer electronics device;

receiving the hypermedia data message using the hypermedia data communications protocol over the proximity bearer; and

25   presenting the hypermedia data message to a user of the remote device using a man-machine interface of the remote device,

wherein the consumer electronics device and remote device both are configured to communicate using the hypermedia data communications protocol over the proximity bearer.

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53.   A method of receiving status information from a consumer electronic

device at a remote data processing device, the method comprising:

sending a data message to a mediating data processing device using a data

communications protocol, the mediating data processing device being configured

5   to communicate using both the data communications protocol and a hypermedia

data communications protocol, the data message comprising data representing the

state of the consumer electronics device;

in response to the data message received, sending a hypermedia data

message to the remote device using the hypermedia data communication protocol

10   over a proximity bearer, the hypermedia data message comprising data representing

the state of the consumer electronics device;

receiving the hypermedia data message using the hypermedia data

communications protocol over the proximity bearer; and

presenting the hypermedia data message to a user of the remote device

15   using a man-machine interface of the remote device,

wherein the remote data processing device is configured to communicate

using the hypermedia data communications protocol over the proximity bearer, and

wherein the consumer electronics device is configured to communicate using the

data communications protocol.

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54.   A consumer electronics device adapted to provide a remote data processing

device with control data that enables a user to control the operation of the

consumer electronics device, the consumer electronics device comprising:

a first portion configured to generate a hypermedia data message, the

25   hypermedia data message comprising data representing one or more menu options,

the menu options corresponding to one or more actions configured to be performed

by the consumer electronics device in response to receiving a control message

corresponding to one or more of the menu options; and

a second portion configured to send the hypermedia data message to the

30   remote data processing device using a hypermedia data communications protocol,

wherein the consumer electronics device is configured to communicate using the hypermedia data communications protocol.

55.   A consumer electronics device adapted to provide a remote data processing device with data representing the operational state of the consumer electronics device, the consumer electronics device comprising:

a first portion configured to generate a hypermedia data message in dependence on the operational state of the consumer electronics device; and

a second portion configured to send the hypermedia data message to the remote data processing device using a hypermedia data communications protocol,

wherein the consumer electronics device are configured to communicate using the hypermedia data communications protocol.

56.   A consumer electronics device adapted to be controlled using a remote data processing device, the consumer electronics device comprising:

a first portion configured to generate a hypermedia data message, the hypermedia data message comprising data representing one or more menu options, the menu options corresponding to one or more actions configured to be performed by the consumer electronics device in response to receiving a control message corresponding to one or more of the menu options;

a second portion configured to send a hypermedia data message to the remote data processing device using a hypermedia data communications protocol;

a third portion configured to receive a control message from the remote data processing device using the hypermedia data communications protocol; and

a fourth portion configured to perform one or more actions in response to a received control message,

wherein the consumer electronics device is configured to communicate using the hypermedia data communications protocol.

57.   A control unit for a consumer electronics device, the control unit being adapted to provide a remote data processing device with control data that enables a user to control the operation of the consumer electronics device, the control unit comprising:

5   a first unit configured to determine the operational state of the consumer electronics device;

           a second unit configured to generate a hypermedia data message, the hypermedia data message comprising data representing one or more menu options, the menu options corresponding to one or more actions configured to be performed

10   by the consumer electronics device; and

           a third unit configured to send the hypermedia data message to the remote data processing device using a hypermedia data communications protocol.

58.   A control unit for a consumer electronics device, the control unit being

15   adapted to provide a remote data processing device with data representing the operational state of the consumer electronics device, the control unit comprising:

           a first unit configured to determine the operational state of the consumer electronics device;

           a second unit configured to generate a hypermedia data message in

20   dependence on the operational state of the consumer electronics device; and

           a third unit configured to send the hypermedia data message to the remote data processing device using a hypermedia data communications protocol.

59.   A control unit for a consumer electronics device, the control unit

25   comprising:

           a first unit configured to generate a hypermedia data message, the hypermedia data message comprising data representing one or more menu options, the menu options corresponding to one or more actions configured to be performed by the consumer electronics device in response to receiving one or more control

30   messages corresponding to one or more of the menu options;

a second unit configured to send the hypermedia data message to a remote data processing device using a hypermedia data communications protocol;

a third unit configured to receive a control message from a remote data processing device; and

5 a fourth unit configured to control the consumer electronics device to perform one or more actions in response to a received control message.

60. The integrated circuit according to Claim 22, further comprising a microprocessor control unit configured to control the communication unit and the
10 interface unit.